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(54) **DATA RELAY BETWEEN COMMUNICATION DEVICES**

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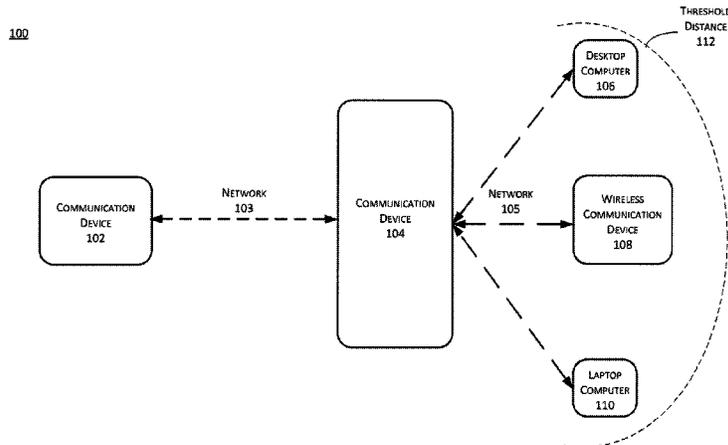
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(57)   **ABSTRACT**

While a user utilizes a communication device to communicate with other devices over a network, certain technical issues may cause the interruption or disconnection of the communication. The communication device may be configured to relay the communication to a secondary device to continue the communication without interrupting the communication.

14 Claims, 4 Drawing Sheets

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H04W 28/08	(2009.01)
H04W 88/04	(2009.01)

(52) **U.S. Cl.**

CPC *H04W 8/005* (2013.01); *H04W 28/08* (2013.01); *H04W 52/027* (2013.01); *H04W 76/022* (2013.01); *H04W 88/04* (2013.01)

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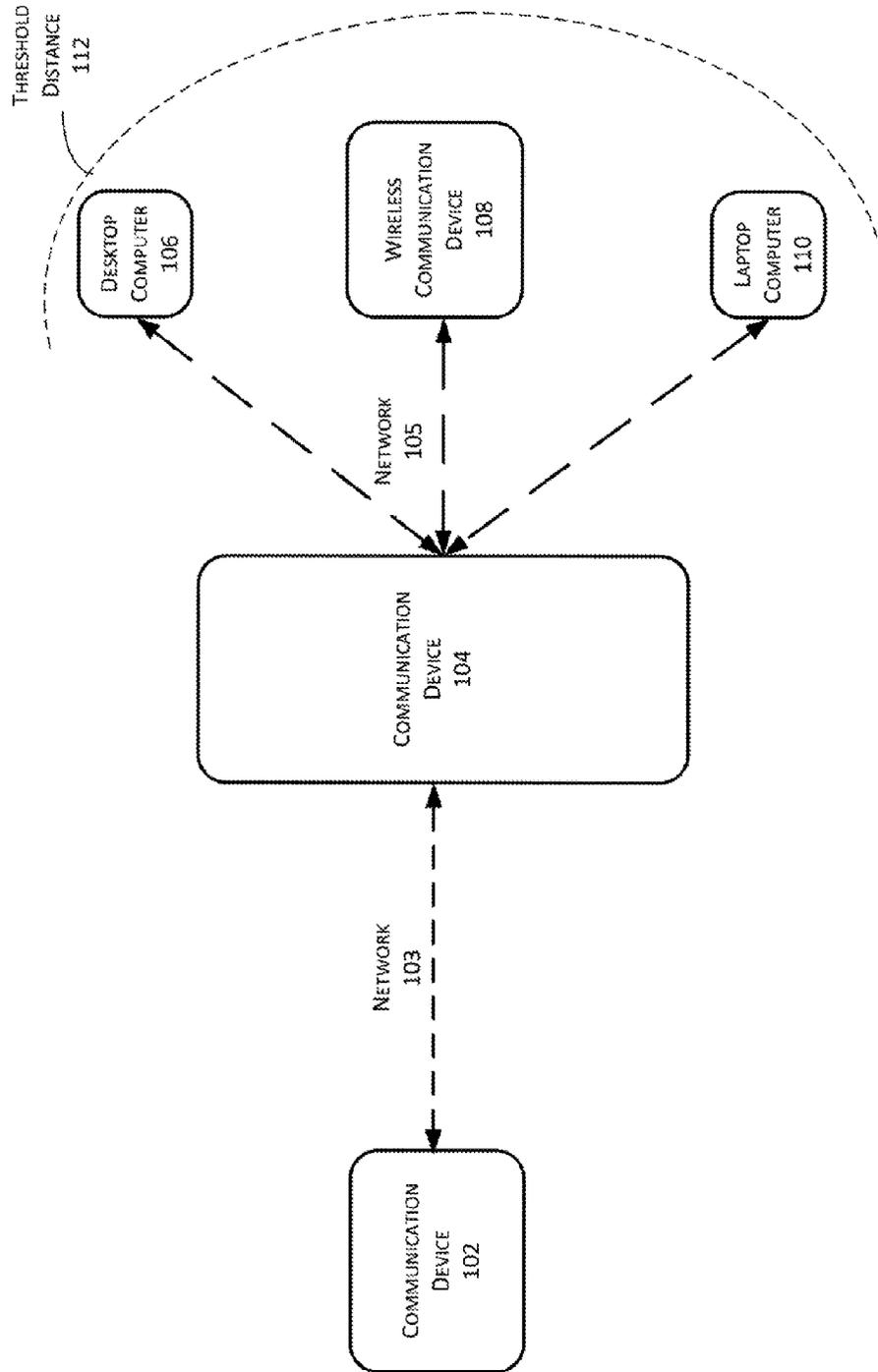
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100

THRESHOLD DISTANCE 112

DESKTOP COMPUTER 106

WIRELESS COMMUNICATION DEVICE 108

LAPTOP COMPUTER 110

NETWORK 105

COMMUNICATION DEVICE 104

NETWORK 103

COMMUNICATION DEVICE 102

FIG. 1

200

COMMUNICATION
DEVICE
104

LOAD BALANCER
202

STORAGE UNIT
203

DISCOVERY MODULE
204

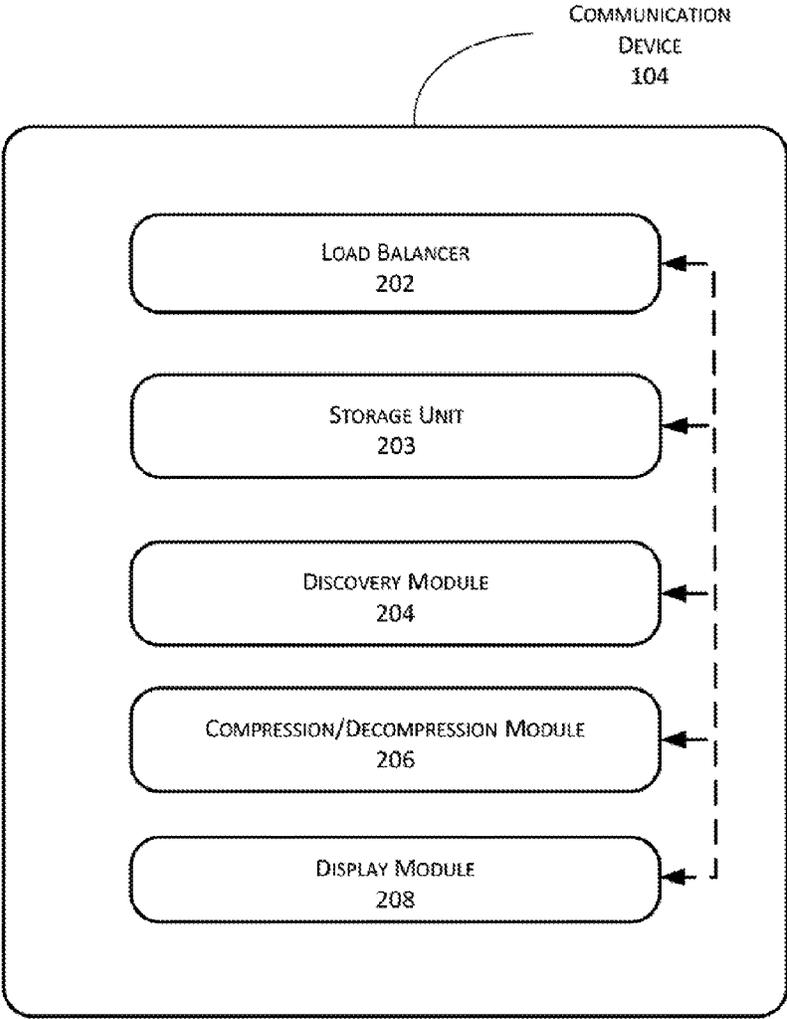COMPRESSION/DECOMPRESSION MODULE
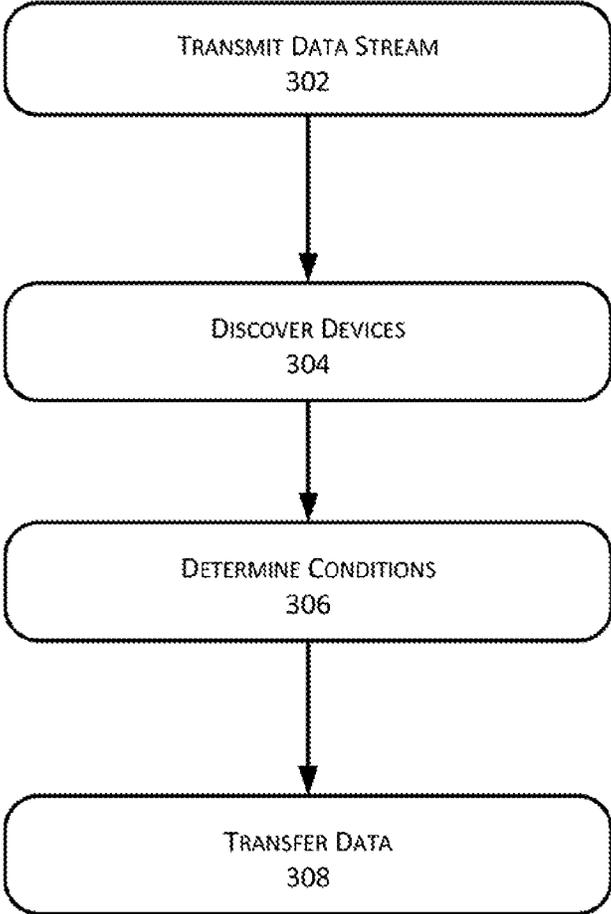206

DISPLAY MODULE
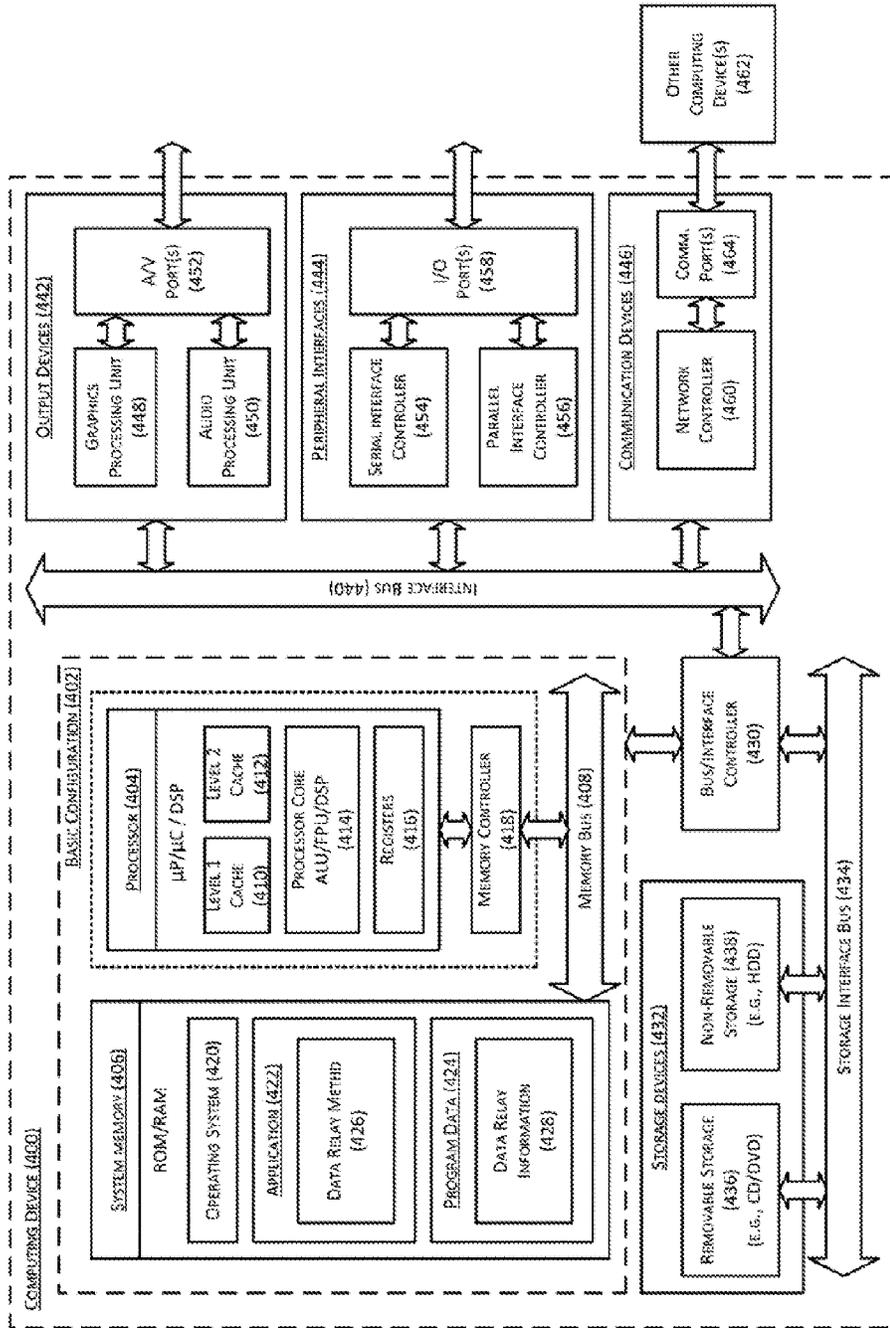208

FIG. 2

300

FIG. 3

FIG. 4

DATA RELAY BETWEEN COMMUNICATION DEVICES

CROSS-REFERENCE TO RELATED APPLICATION

This Application is the U.S. National Stage filing under 35 U.S.C. § 371 of International Application No. PCT/CN2013/081162, filed on Aug. 9, 2013. The disclosure of the International Application is hereby incorporated herein by reference in its entirety.

TECHNICAL FIELD

The technologies described herein pertain generally to data relay between communication devices, one of which may be configured to communicate with other devices over a network.

BACKGROUND

Unless otherwise indicated herein, the approaches described in this section are not prior art to the claims in this application and are not admitted to be prior art by inclusion in this section.

While a user utilizes a communication device to communicate with other devices over a network, certain technical issues of the communication device, e.g., battery outage may cause the interruption or disconnection of the communication and may further worsen user experience.

SUMMARY

Technologies are generally described for accessing USB devices. The various techniques may be implemented in various systems, methods, and/or computer-readable mediums.

In some examples, various techniques may be implemented as devices. Some devices may include a load balancer, communicatively coupled to a first communication device, configured to transfer a communication data stream between a service provider and the first communication device to a second communication device, in accordance with at least one of a plurality of predetermined conditions regarding at least one of the device or the second communication device; and a storage unit configured to store identification information corresponding to the second communication device.

In some examples, various techniques may be implemented as methods. Some methods may include transmitting a communication data stream between a service provider and a first communication device; discovering one or more communication devices within a predetermined distance of a first communication device; determining that at least one of a plurality of predetermined conditions is met; and transferring the communication data stream to a second communication device, which is one of the discovered communication devices.

In some other examples, various techniques may be implemented as executable instructions stored on one or more computer-readable mediums. Some computer-readable mediums may store executable instructions that include determining at least one of a plurality of predetermined conditions is met, selecting a second communication device within a predetermined distance of a first communication device, and relaying a communication data stream between

the first communication device and a calling party to the second communication device.

The foregoing summary is illustrative only and is not intended to be in any way limiting. In addition to the illustrative aspects, embodiments, and features described above, further aspects, embodiments, and features will become apparent by reference to the drawings and the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

In the detailed description that follows, embodiments are described as illustrations only since various changes and modifications will become apparent to those skilled in the art from the following detailed description. The use of the same reference numbers in different figures indicates similar or identical items. In the drawings:

FIG. 1 shows an example system in which data relay between communication devices may be implemented, arranged in accordance with at least some embodiments described herein;

FIG. 2 shows an example communication device by which data relay between communication devices may be implemented, arranged in accordance with at least some embodiments described herein;

FIG. 3 shows an example configuration of a processing flow of operations by which data relay between communication devices may be implemented, arranged in accordance with at least some embodiments described herein; and

FIG. 4 shows a block diagram illustrating an example computing device that is arranged for data relay between communication devices, arranged in accordance with at least some embodiments described herein.

DETAILED DESCRIPTION

In the following detailed description, references are made to the accompanying drawings, which form a part of the description. In the drawings, similar symbols typically identify similar components, unless context dictates otherwise. Furthermore, unless otherwise noted, the description of each successive drawing may reference features from one or more of the previous drawings to provide clearer context and a more substantive explanation of the current embodiment. Still, the embodiments described in the detailed description, drawings, and claims are not meant to be limiting. Other embodiments may be utilized, and other changes may be made, without departing from the spirit or scope of the subject matter presented herein. It will be readily understood that the aspects of the present disclosure, as generally described herein and illustrated in the drawings, may be arranged, substituted, combined, separated, and designed in a wide variety of different configurations, all of which are explicitly contemplated herein.

FIG. 1 shows an example system 100 in which data relay between communication devices may be implemented, arranged in accordance with at least some embodiments described herein. As depicted, example system 100 may include, at least, a communication device 102 that communicates, via a network 103, with a communication device 104 that may be configured to relay the communication to, via a network 105, other communication devices. The other communication devices may include a desktop computer 106, a wireless communication device 108, or a laptop computer 110, which may be located within a threshold distance 112 of communication device 104.

Communication device **102** may refer to a physical device that may be configured to exchange information with other communication devices via network **103**. In accordance with some examples, communication device **102** may include telephones, cellphones, smart phones, personal digital assistant (PDA), or portable two-way radio transceivers. In accordance with other examples, communication devices **102** may include computing devices that may be configured to communicate with other wireless communication devices via the Internet. For example, the computing devices may include laptop computers, desktop computers, etc.

Network **103** may refer to a communication link that may be configured to support the information exchange between communication device **102** and communication device **104**. In accordance with some examples, network **103** may refer to a cellular network that includes multiple cells and respective base stations. In other examples, network **103** may refer to the Internet that provides communication between multiple network terminals. One or more servers (not shown) may be configured to support the communication via the Internet. That is, a real time communication data stream may be established between communication device **102** and a service provider hosted on one of the multiple cells via network **103**. Unexpected technical difficulties may cause interruptions or disconnections to the real time communication data stream and may further lower the user experience. For example, power outage on communication device **104** may cause a disconnection of the data stream.

Communication device **104** may refer to a physical device that may be configured to transceive information with communication device **102** and other communication devices via network **105**. The other communication devices may be communicatively coupled to communication device **104**, wirelessly or via a wired connection, via network **105** so that the other communication devices remain discoverable to communication device **104**. A real time communication data stream may be established between communication device **102** and communication device **104** over network **103**. Communication device **104** may be configured to discover the other communication devices, e.g., desktop computer **106**, wireless communication device **108**, laptop computer **110**, etc., within threshold distance **112**. The identification information corresponding to the other communication devices may be stored in communication device **104**. When unexpected technical difficulties occur, such as a battery power of communication device **104** falls below a preset threshold value or a processor of communication device **104** fails to process data stored on communication device **104**, communication device **104** may be configured to transfer the aforementioned information exchange, e.g., the real time communication data stream, to one of the other communication devices. That is, communication device **104** may be configured to relay the real time communication data stream between communication device **102** and one of the other communication devices. In some examples, during relaying the real time communication data stream, components other than a network adapter, such as display module, web camera, speakers, may not be functioning and, thus, may be turned off to save energy. A user of communication device **104** may start to utilize one of the other communication devices to continue the communication with communication device **102** without interrupting the real time communication data stream.

Network **105** may refer to a communication link that may be configured to support the information exchange between communication device **104** and other communication devices, e.g., desktop computer **106**, wireless communica-

tion device **108**, laptop computer **110**, etc., within threshold distance **112**. Network **105** may be established based on various communication techniques, wireless or via a wired connection, that include Wireless Fidelity (Wi-Fi), Bluetooth, local area network, Near Field Communication (NFC), Radio Frequency Identification (RFID), electromagnetic waves, etc.

Desktop computer **106** may refer to a computer in a form intended for regular use at a single location. Desktop computer **106** may be configured to be communicatively coupled to communication device **104** via network **105**. In some examples, when communication device **104** experiences technical difficulties and may not be suitable for processing the real time communication data stream, desktop computer **106** may be configured to process the communication data stream. For example, when a user on communication device **102** is conducting a video conference with another user on communication device **104**, communication device **104** may transfer the processing of the video conference to desktop computer **106** if the battery power of communication device **104** falls below a preset threshold value, or the processor of communication device **104** fails to process data. That is, the user on communication device **104** may utilize the input and output devices, e.g., video camera, microphone, speaker, etc., of desktop computer **106** to continue the video conference.

Wireless communication device **108** may refer to a physical device that may be configured to exchange information with communication device **104** wirelessly. Wireless communication device **108** may be implemented as telephones, cellphones, smart phones, personal digital assistant (PDA), or other forms of portable two-way radio transceivers. When communication device **104** experiences technical difficulties and may not be suitable for processing the real time communication data stream, wireless communication device **108** may be configured to process the real time communication data stream initiated between communication device **102** and communication device **104**. For example, when the user on communication device **104**, e.g., a cellphone, is making phone call with another user on communication device **102**, e.g., another cellphone, and the battery of communication device **104** falls below a preset threshold value, or the processor of communication device **104** fails to process data, communication device **104** may transfer the processing of the data stream of the phone call to wireless communication device **108**. That is, the user may utilize wireless communication device **108** to continue the phone call without interrupting the real time communication data stream.

Laptop computer **110** may refer to a portable computer that may be configured to exchange information with communication device **104** via network **105**. Laptop computer **110** may include hardware components, such as web camera, microphone, speakers, integrated thereon so that the user of communication device **104** may utilize laptop computer **110** when communication device **104** is not suitable to continue processing the communication data stream between communication device **102** and communication device **104**.

Threshold distance **112** may refer to a distance preset by communication device **104** so that communication devices within threshold distance **112** may establish a stable and robust connection with communication device **104**.

Thus, FIG. **1** shows an example system **100** that may include communication device **102** that communicates, via network **103**, with communication device **104** that may be configured to relay the communication to, via network **105**, desktop computer **106**, wireless communication device **108**, or laptop computer **110**.

FIG. **2** shows an example communication device **104** by which data relay between communication devices may be implemented, arranged in accordance with at least some embodiments described herein. As depicted, example communication device **104** may include a load balancer **202**, a storage unit **203**, a discovery module **204**, a compression/decompression module **206**, and a display module **208**, each of which may be configured to interact with each other.

Load balancer **202** may refer to a software component, a hardware component, a firmware component, or a combination thereof that may be configured to transfer a real time communication data stream between communication device **102** and communication device **104** to other communication devices in accordance with at least one of a plurality of predetermined conditions that indicate unexpected technical difficulties. The plurality of predetermined conditions may include at least one of a battery power of communication device **104** falling below a preset threshold value, a processor of communication device **104** failing to process data stored thereon, a web camera of communication device **104** failing to capture images, etc. In accordance with some examples, load balancer **202** may select one from other communication devices discovered by discovery module **204**. For example, when certain technical difficulties occur during a video conference between communication device **102** and communication device **104**, e.g., the microphone of communication device **104** stops working, load balancer **202** may select a communication device with a working microphone from the communication devices discovered by discovery module **204** and transfer, or relay, the real time communication data stream of the video conference to the selected communication device so that the user may continue the video conference without interruption.

Storage unit **203** may refer to a hardware component that may be configured to store identification information of the discovered communication devices. Storage unit **203** may be implemented as random access memory (RAM), hard disk, solid state drive (SSD), etc.

Discovery module **204** may refer to a software component, a hardware component, a firmware component, or a combination thereof that may be configured to discover other communication devices within threshold distance **112** of communication device **104**. In accordance with some examples, discovery module **204** may be configured to discover laptop computers connected to communication device **104** via a Wi-Fi network, desktop computers connected to communication device **104** via a local area network, or a cellphone connected to communication device **104** via a Bluetooth connection within threshold distance **112** of communication device **104**. The identification information of the communication devices may be submitted to storage unit **203** and stored thereon.

Compression/decompression module **206** may refer to a software component, a hardware component, a firmware component, or a combination thereof that may be configured to compress raw data collected by input devices of communication device **104** into one or more transferrable data packets and decompress one or more data packets received from communication device **102** to raw data that may be processed by communication device **104**.

Display module **208** may refer to a hardware component that may be configured to display contents received from communication device **102** or generated on communication device **104**. For example, display module **208** may be configured to display a video stream of a video conference or an interface of a cellphone. In accordance with some examples, when communication device **104** transfers the

real time communication data stream to one of other communication devices, compression/decompression module **206**, display module **208**, and other components, e.g., web camera, microphone, etc., may not be necessary for transferring. Thus, compression/decompression module **206**, display module **208**, and other components may be turned off to save power.

Thus, FIG. **2** shows an example communication device **104** that may include load balancer **202**, storage unit **203**, discovery module **204**, compression/decompression module **206**, and display module **208**.

FIG. **3** shows an example configuration of a processing flow **300** of operations by which data relay between communication devices may be implemented, arranged in accordance with at least some embodiments described herein. As depicted, processing flow **300** may include sub-processes executed by various components that are part of example systems **100**. However, processing flow **300** is not limited to such components, and modification may be made by re-ordering two or more of the sub-processes described here, eliminating at least one of the sub-processes, adding further sub-processes, substituting components, or even having various components assuming sub-processing roles accorded to other components in the following description. Processing flow **300** may include various operation, functions, or actions as illustrated by one or more of blocks **302**, **304**, **306**, and **308**. Processing may begin at block **302**.

Block **302** (Transmit Data Stream) may refer to communication device **104** transmitting a communication data stream between communication device **102** and communication device **104**. In some examples, the communication data stream may be established and maintained via a service provider such as a server over a network or a cell in a cellular network. The communication data stream may include a real time video conference, a phone call, etc. Processing may continue from block **302** to block **304**.

Block **304** (Discover Devices) may refer to discovery module **204** of communication device **104** discovering one or more communication devices within a predetermined distance, e.g., threshold distance **112**, of communication device **104**. The one or more communication devices may be communicatively coupled to communication device **104** in accordance with one or more communication protocols that include Bluetooth, NFC, RFID, Wi-Fi, etc. The method to discover the one or more communication devices may vary depending on the type of the communication protocols. For example, in discovering the one or more communication devices coupled to communication device **104** via a Bluetooth connection, communication device **104** may adopt Service Discovery Protocols (SDP) that allows communication device **104** to discover the services that the one or more communication devices support and the parameters to use to connect to the one or more communication devices. Identification information of the one or more communication devices may be stored in storage unit **203**. Processing may continue from block **304** to block **306**.

Block **306** (Determine Conditions) may refer to load balancer **202** determining that at least one of a plurality of predetermined conditions is met. The plurality of predetermined conditions may include a battery power of communication device **104** falling below a preset threshold value, a processor of communication device **104** failing to process data stored on communication device **104**, a web camera of communication device **104** failing to capture pictures, etc. Processing may continue from block **306** to block **308**.

Block **308** (Transfer Data) may refer to load balancer **202** transferring, i.e., relaying, the communication data stream to

one of the one or more discovered communication devices. When one of the aforementioned plurality of predetermined conditions is met, load balancer **202** may be configured to select one from the discovered communication devices and one protocol from a plurality of protocols based on a distance from communication device **104** to the selected communication device to transfer the communication data stream. For example, if the selected communication device is located within 10 meters, load balancer **202** may be configured to select Bluetooth as the protocol in transferring the communication data stream. In some examples, a user of communication device **104** may pre-select, or designate, one from discovered communication device before one of the plurality of predetermined conditions is met. For example, a user of communication device **104**, e.g., a first cellphone, may pre-select a second cellphone as a backup communication device since the user may foresee the battery power of the first cellphone may not last long enough for the phone call. When the battery power of the first cellphone drops below a predetermined threshold value, the first cellphone may start to transfer the phone call to the second cellphone. Meanwhile, all other components unnecessary for maintaining the phone call may be turned off. For example, compression/decompression module **206** and display module **208** may be turned off to save power.

Thus, FIG. **3** shows an example configuration of a processing flow **300** of operations including transmitting a communication data stream between a service provider and communication device **104**, discovering one or more communication devices within a predetermined distance of communication device **104**, determining that at least one of a plurality of predetermined conditions is met, and transferring the communication data stream to the second communication device, which is one of the discovered communication devices.

FIG. **4** shows a block diagram illustrating an example computing device that is arranged for data relay between communication devices, arranged in accordance with at least some embodiments described herein.

FIG. **4** is a block diagram illustrating an example computing device **400** that is arranged for data relay in accordance with the present disclosure. In a very basic configuration **402**, computing device **400** typically includes one or more processors **404** and a system memory **406**. A memory bus **408** may be used for communicating between processor **404** and system memory **406**.

Depending on the desired configuration, processor **404** may be of any type including but not limited to a microprocessor (µP), a microcontroller (µC), a digital signal processor (DSP), or any combination thereof. Processor **404** may include one more levels of caching, such as a level one cache **410** and a level two cache **412**, a processor core **414**, and registers **416**. An example processor core **414** may include an arithmetic logic unit (ALU), a floating point unit (FPU), a digital signal processing core (DSP Core), or any combination thereof. An example memory controller **418** may also be used with processor **404**, or in some implementations memory controller **418** may be an internal part of processor **404**.

Depending on the desired configuration, system memory **406** may be of any type including but not limited to volatile memory (such as RAM), non-volatile memory (such as ROM, flash memory, etc.) or any combination thereof. System memory **406** may include an operating system **420**, one or more applications **422**, and program data **424**. Application **422** may include a data relay method **426** that is arranged to perform the operations as described herein

including those described with respect to processing flow **300** of FIG. **3**. Program data **424** may include data relay information **428** that may be useful for configuring data relay algorithm as is described herein. In some embodiments, application **422** may be arranged to operate with program data **424** on operating system **420** such that implementations of data relay communication devices may be provided as described herein. This described basic configuration **402** is illustrated in FIG. **4** by those components within the inner dashed line.

Computing device **400** may have additional features or functionality, and additional interfaces to facilitate communications between basic configuration **402** and any required devices and interfaces. For example, a bus/interface controller **430** may be used to facilitate communications between basic configuration **402** and one or more data storage devices **432** via a storage interface bus **434**. Data storage devices **432** may be removable storage devices **436**, non-removable storage devices **438**, or a combination thereof. Examples of removable storage and non-removable storage devices include magnetic disk devices such as flexible disk drives and hard-disk drives (HDD), optical disk drives such as compact disk (CD) drives or digital versatile disk (DVD) drives, solid state drives (SSD), and tape drives to name a few. Example computer storage media may include volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information, such as computer readable instructions, data structures, program modules, or other data.

System memory **406**, removable storage devices **436** and non-removable storage devices **438** are examples of computer storage media. Computer storage media includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which may be used to store the desired information and which may be accessed by computing device **400**. Any such computer storage media may be part of computing device **400**.

Computing device **400** may also include an interface bus **440** for facilitating communication from various interface devices (e.g., output devices **442**, peripheral interfaces **444**, and communication devices **446**) to basic configuration **402** via bus/interface controller **430**. Example output devices **442** include a graphics processing unit **448** and an audio processing unit **450**, which may be configured to communicate to various external devices such as a display or speakers via one or more A/V ports **452**. Example peripheral interfaces **444** include a serial interface controller **454** or a parallel interface controller **456**, which may be configured to communicate with external devices such as input devices (e.g., keyboard, mouse, pen, voice input device, touch input device, etc.) or other peripheral devices (e.g., printer, scanner, etc.) via one or more I/O ports **458**. An example communication device **446** includes a network controller **460**, which may be arranged to facilitate communications with one or more other computing devices **462** over a network communication link via one or more communication ports **464**.

The network communication link may be one example of a communication media. Communication media may typically be embodied by computer readable instructions, data structures, program modules, or other data in a modulated data signal, such as a carrier wave or other transport mechanism, and may include any information delivery media. A "modulated data signal" may be a signal that has one or

more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media may include wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, radio frequency (RF), microwave, infrared (IR) and other wireless media. The term computer readable media as used herein may include both storage media and communication media.

Computing device **400** may be implemented as a portion of a small-form factor portable (or mobile) electronic device such as a cell phone, a personal data assistant (PDA), a personal media player device, a wireless web-watch device, a personal headset device, an application specific device, or a hybrid device that include any of the above functions. Computing device **400** may also be implemented as a personal computer including both laptop computer and non-laptop computer configurations.

We claim:

1. A first wireless communication device, comprising:
a discovery module configured to discover one or more other wireless communication devices proximate to the first wireless communication device;
a load balancer configured to:
select a second wireless communication device from the discovered one or more other wireless communication devices after the load balancer determines that one or more specific conditions are met, wherein the one or more specific conditions include a battery condition that a battery power of the first wireless communication device falls below a particular threshold and a user interface condition that a user interface of the first wireless communication device fails to process data associated with a wireless communication data stream between a service provider and the first wireless communication device, and wherein the second wireless communication device is different from the first wireless communication device;
transfer the wireless communication data stream to the second wireless communication device, in-response to at least one of the one or more specific conditions being met; and
turn off components, of the first wireless communication device, which are not required for the transfer of the wireless communication data stream when the one or more specific conditions being met is the battery condition, wherein the components of the first wireless communication device are turned off while the wireless communication data stream is transferred to the second wireless communication device; and
a storage unit configured to store identification information that corresponds to the second wireless communication device,
wherein the selection of the second wireless communication device is based on a state of a user interface of the second wireless communication device when the one or more specific conditions being met is the user interface condition, wherein the state is a working state, and wherein the user interface of the second wireless device corresponds to the user interface of the first wireless communication device.

2. The first wireless communication device of claim **1**, wherein the load balancer is configured to transfer the wireless communication data stream in accordance with one of a plurality of wireless communication protocols based on a distance between the first wireless communication device and the second wireless communication device.

3. The first wireless communication device of claim **2**, wherein the plurality of wireless communication protocols include near field communication (NFC), radio frequency identification (RFID), and wireless fidelity (Wi-Fi).

4. A method, comprising:
transmitting a wireless communication data stream between a service provider and a first wireless communication device;
discovering one or more other wireless communication devices proximate to the first wireless communication device;
determining that at least one of a plurality of specific conditions is met, wherein the at least one of the plurality of specific conditions includes a battery condition that a battery power of the first wireless communication device falls below a particular threshold and a user interface condition that a user interface component of the first wireless communication device fails to process data associated with the wireless communication data stream; and
based on the determination that the at least one of the plurality of specific conditions is met:
selecting a second wireless communication device from the discovered one or more other wireless communication devices proximate to the first wireless communication device, wherein the selection of the second wireless communication device is based on a state of a user interface component of the second wireless communication device when the at least one of the plurality of specific conditions being met is the user interface condition, wherein the state of the user interface component of the second wireless communication device indicates that the user interface component of the second wireless communication device is in a working state, and wherein the user interface component of the second wireless communication device corresponds to the user interface component of the first wireless communication device;
transferring the wireless communication data stream to the second wireless communication device; and
turning off components, of the first wireless communication device, which are not required for the transfer of the wireless communication data stream when the at least one of the plurality of specific conditions being met is the battery condition, wherein the components of the first wireless communication device are turned off while the wireless communication data stream is transferred to the second wireless communication device.

5. The method of claim **4**, wherein the transferring comprises selecting one protocol from a plurality of wireless communication protocols based on a distance from the first wireless communication device to the second wireless communication device.

6. The method of claim **5**, wherein the selecting one protocol from the plurality of wireless communication protocols comprises selecting one protocol from the plurality of wireless communication protocols that include (NFC), radio frequency identification (RFID), and wireless fidelity (Wi-Fi).

7. A non-transitory computer-readable medium having instructions stored thereon that, in response to execution, cause a first wireless communication device to perform or control performance of operations to:

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discover one or more other wireless communication devices proximate to the first wireless communication device;

determine that at least one of a plurality of specific conditions is met, wherein the at least one of the plurality of specific conditions includes a battery condition that a battery power of the first wireless communication device falls below a particular threshold and a user interface condition that a user interface component of the first wireless communication device fails to process data associated with a wireless communication data stream between the first wireless communication device and a calling party;

select a second wireless communication device from the discovered one or more other wireless communication devices proximate to the first wireless communication device after at least one of the plurality of specific conditions is met, wherein the selection of the second wireless communication device is based on a state of a user interface component of the second wireless communication device when the at least one of the plurality of specific conditions being met is the user interface condition, wherein the state of the user interface component indicates that the user interface component of the second wireless communication device is in a working state, wherein the user interface component of the second wireless communication device corresponds to the user interface component of the first wireless communication device, and wherein the second wireless communication device is different from the first wireless communication device;

relay the wireless communication data stream to the second wireless communication device; and

turn off components, of the first wireless communication device, which are not required for the relay of the wireless communication data stream when the at least one of the plurality of specific conditions being met is the battery condition, wherein the components of the first wireless communication device are turned off while the wireless communication data stream is relayed to the second wireless communication device.

8. The computer-readable medium of claim 7, wherein the operation to relay comprises an operation to select one wireless communication protocol from a plurality of wireless communication protocols based on a distance between the first wireless communication device and the second wireless communication device.

9. The computer-readable medium of claim 8, wherein the operation to select the one wireless communication protocol from the plurality of wireless communication protocols comprises an operation to select the one wireless communication protocol from the plurality of wireless communication protocols that include near field communication (NFC), radio frequency identification (RFID), and wireless fidelity (Wi-Fi).

10. A system, comprising:

a first wireless communication device in communication with a calling party; and

a second wireless communication device selected from discovered one or more other wireless communication devices, wherein the second wireless communication device is different from the first wireless communication device,

wherein the first wireless communication device comprises:

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a discovery module configured to discover the one or more other wireless communication devices proximate to the first wireless communication device; and

a load balancer configured to:

select the second wireless communication device from the discovered one or more other wireless communication devices after the load balancer determines that one or more specific conditions is met;

transfer a wireless communication data stream between the first wireless communication device and the calling party to the second wireless communication device, after at least one of the one or more specific conditions is met,

wherein the one or more specific conditions include a battery condition that a battery power of the first wireless communication device falls below a particular threshold and a user interface condition that a user interface of the first wireless communication device fails to process data associated with the wireless communication data stream; and

turn off components, of the first wireless communication device, which are not required for the transfer of the wireless communication data stream when the one or more specific conditions being met is the battery condition, wherein the components of the first wireless communication device are being turned off while the wireless communication data stream is transferred to the second wireless communication device,

wherein the selection of the second wireless communication device is based on a state of a user interface of the second wireless communication device when the one or more specific conditions being met is the user interface condition, wherein the state is a working state, and wherein the user interface of the second wireless device corresponds to the user interface of the first wireless communication device.

11. The first wireless communication device of claim 1, wherein the turned off components of the first wireless communication device include one or more of a web camera, a microphone, a compression/decompression module, and a display module.

12. The method of claim 4, wherein the user interface component of the first wireless communication device includes one of a web camera of the first wireless communication device and a microphone of the first wireless communication device, and wherein the user interface component of the second wireless communication device includes one of a web camera of the second wireless communication device and a microphone of the second wireless communication device.

13. The non-transitory computer readable medium of claim 7, wherein the user interface component of the first wireless communication device includes one of a web camera of the first wireless communication device and a microphone of the first wireless communication device, and wherein the user interface component of the second wireless communication device includes one of a web camera of the second wireless communication device and a microphone of the second wireless communication device.

14. The system of claim 10, wherein the turned off components of the first wireless communication device

includes one or more of a web camera, a microphone, a compression/decompression module, and a display module.

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